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EXAMINER

YOUNGER, SEAN JERRARD

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/564,076
Filing Date: January 10, 2006
Appellant(s): BOHDAL, RUDOLF

William C. Gehris
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11 August 2010 appealing from the Office action mailed 6 January 2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 17-42 are rejected and pending.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

A) Claims 17-19, 29, 31-33 and 37-42 are rejected under 35 USC 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660].

B) Claims 21-23 are rejected under 35 USC 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Sugihara et al. [U.S. 5,554,338]

C) Claims 24-26 are rejected under 35 USC 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Gegel et al. [U.S. 6,551,551].

D) Claims 27 and 28 are rejected under 35 USC 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Ford Motor Company [GB 1 470 949]

E) Claims 34-36 are rejected under 35 USC 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Merrick et al. [U.S. 6,890,370].

NEW GROUND(S) OF REJECTION

F) Claims 17, 29, 33 and 37-39 are rejected under 35 USC 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498].

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

5,733,498	Kawakami et al.	3-1998
2,796,660	Irmann	6-1957
5,554,338	Sugihara et al.	9-1996
6,551,551	Gegel et al.	4-2003
6,890,370	Merrick et al.	5-2005
GB 1 470 949	Ford Motor Company	4-1977

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 17-19, 29, 31-33 and 37-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660]. Regarding claims 17 and 33, Kawakami et al. disclose a method for manufacturing vane segments for a gas turbine comprising the steps of providing a plurality of vanes, and manufacturing a vane segment via powder metallurgy. The step of manufacturing includes the steps of mixing a metal powder having a binding agent to form a homogeneous material [column 14, line 65 – column 15, line 3], forming at least one molded body from the homogeneous material via injection molding [column 15, lines 23-25], subjecting the at least one molded body to a debinding process [column 15, lines

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52-53], and compressing the at least one molded body via sintering to form the vane segment [column 15, lines 53-54]. Kawakami et al., having a primarily silicon-nitride powder base, do not disclose that a metal powder accounts for more than 50% of the homogeneous material. Irmann teaches that the vanes of a gas turbine engine [column 6, lines 40-42] can be made using a powder metallurgical process using a homogeneous powder having at least 50% metal (aluminum). It would have been obvious to modify the method of Kawakami et al. by using a homogeneous powder comprised of at least 50% metal, rather than silicon nitride, because the materials were known for use in the powder metallurgy process and could have been implemented by one of ordinary skill with predictable results.

3. Regarding claims 18 and 19, the guide vane segment of Kawakami et al. includes four guide vanes.

4. Regarding claim 29, Kawakami et al. disclose a component for a gas turbine comprising a guide vane segment (11) manufactured from a plurality of guide vanes via powder metallurgy injection molding. Kawakami et al., having a primarily silicon-nitride powder base, do not disclose that a metal powder accounts for more than 50% of the homogeneous material. Irmann teaches that the vanes of a gas turbine engine [column 6, lines 40-42] can be made using a powder metallurgical process using a homogeneous powder having at least 50% metal (aluminum). It would have been obvious to modify the method of Kawakami et al. by using a homogeneous powder comprised of at least 50% metal, rather than silicon nitride, because the materials were

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known for use in the powder metallurgy process and could have been implemented by one of ordinary skill with predictable results.

5. Regarding claims 31 and 32, the guide vane segment of Kawakami et al. includes four guide vanes connected via an inner cover band (13) and an outer cover band (12).

6. Regarding claims 37-39, the metal powder of Irmann comprises 50-70% of the homogeneous material.

7. Regarding claims 40-42, the vane segments of Kawakami et al., stated as manufactured for use in a gas turbine engine, are capable of use in an aircraft engine.

8. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Sugihara et al. [U.S. 5,554,338]. Kawakami et al., as modified by Irmann in the rejection of claim 17 above, disclose all elements substantially as claimed, but fail to disclose the order of joining and debinding steps. Sugihara et al. teach a method of preparing a composite sintered body, where a molded body for each part is prepared and then the molded bodies are joined together in the green state prior to the debinding and sintering process to form one molded body. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to further modify the method of Kawakami et al. to include the ability to form individual elements and join them before debinding and sintering, as taught by Sugihara et al., because the technique for a

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particular process was within the capabilities of a person of ordinary skill, in view of the teaching of the technique for improvement in similar situations.

9. Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Gegel et al. [U.S. 6,551,551]. Kawakami et al., as modified by Irmann in the rejection of claim 17 above, disclose all elements substantially as claimed, but fail to disclose the order of joining and debinding steps. Gegel et al. teach a method of preparing a composite sintered body, where separate molded bodies go through a debinding process before they are joined in a presintered state to form one body [column 6, lines 20-25], and are subsequently subjected to a uniform sintering process. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to further modify the method of Kawakami et al. to join the bodies after debinding and before sintering, as taught by Gegel et al., because the technique for a particular process was within the capabilities of a person of ordinary skill, in view of the teaching of the technique for improvement in similar situations.

10. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Ford Motor Company, Ltd. (Ford) [GB 1,470,949]. Kawakami et al., as modified by Irmann in the rejection of claim 17 above, disclose all elements substantially as claimed, but fail to disclose that a joint molded body is formed, via injection molding, for all vanes of the

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segment. Ford teaches that a complex molded body comprising multiple airfoils (12) and a supporting cover band (14) can be formed in one piece, via injection molding. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to further modify the method of Kawakami et al. to include the ability to form individual elements and join them before debinding and sintering, as taught by Ford, because the technique for a particular process was within the capabilities of a person of ordinary skill, in view of the teaching of the technique for improvement in similar situations.

11. Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498] in view of Irmann [U.S. 2,796,660] and Merrick et al. [U.S. 6,890,370]. Kawakami et al., as modified by Irmann in the rejection of claim 17 above, disclose all elements substantially as claimed, but fail to disclose that the metal powder is either titanium or nickel based. Merrick et al. teach a nickel-based alloy used in a powder metallurgical manufacture of a gas turbine engine component. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to further modify the method of Kawakami et al. to use a nickel-based alloy, as taught by Merrick et al., because the material was known in the art and could be implemented by one of ordinary skill with predictable results.

NEW GROUND(S) OF REJECTION

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12. Claims 17, 29, 33 and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al. [U.S. 5,733,498]. Kawakami et al. disclose all elements substantially as claimed, as described in the rejections of claims 17, 29 and 33 above, but fail to disclose the specific percent composition ranges of metal powder in the homogeneous mixture. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the method of Kawakami et al. by using a mixture having 50 to 70% metal powder, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

(10) Response to Argument

13. In response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Irmann does not need to teach a binding agent, since Kawakami et al. already include the limitations and method steps regarding the binding agent in the homogeneous mixture.

14. In response to Appellant's argument that the metal powder of Irmann is not used for an injection molding process, the examiner respectfully submits that Irmann shows that, in general, a powder metallurgical process including sintering can be done with a powdered mixture having mostly metal. Secondly, Irmann discloses that the metallic

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powder can be "hot compressed in a shaping mold". Furthermore, the injection molding process is known from the Kawakami et al. reference and thus Irmann does not need to teach injection molding specifically, since the rejections are based on a combination of the references.

15. The Appellant asserts at page 5 of the brief that Irmann is directed to using "pure aluminum". The examiner respectfully disagrees, and submits that Irmann discloses a mixture consisting *predominately* of Aluminum (see claims 1, 5), and teaches against the use of pure Aluminum, since, in its pure state, the properties are undesirable [column 1, lines 21-23]. Therefore, in at least one embodiment, the metal powder mixture of Irmann is *not* pure Aluminum and is sufficient to read on the claims, as they are broadly stated.

16. In response to Appellant's argument that there is no reason to modify the mixture of Kawakami et al., the examiner respectfully submits that mixture strength of a compound composition having different materials, and used to create an apparatus, is a result effective variable. One of ordinary skill, attempting to arrive at an apparatus with different material properties would be fully capable of varying the percent of metal in the homogeneous mixture to achieve whatever final material properties are possible and desirable for the final device based on the relative amounts of the materials in the base mixture.

17. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

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USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, Irmann does not need to teach the joining and debinding processes, while in a green state, since Kawakami et al. already include the limitations and method steps regarding joining and debinding a green component.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

This examiner's answer contains a new ground of rejection set forth in section **(9)** above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) Reopen prosecution. Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

(2) Maintain appeal. Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of

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rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

Respectfully submitted,

/Sean J. Younger/

Examiner, Art Unit 3745

A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

/KAREN M. YOUNG/

Director, Technology Center 3700

Conferees:

/Edward K. Look/

Supervisory Patent Examiner, Art Unit 3745

/Kenneth B Rinehart/

Supervisory Patent Examiner, Art Unit 3743

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